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ABSTRACT

This document is designed to provide an overview of the Individualized Learning System as planned for implementation in Oregon vocational education programs. The document provides information and suggested procedures for implementation of an individualized course using Individualized Learning System materials. The guide is organized into six sections. The first two sections provide the rationale for individualized instruction and explain the teacher's and student's roles in an individualized instruction system. Section 3 reviews existing course materials, including goal-based planning for vocational education, the cluster guide, and the Individualized Learning System, while the next two sections explain how to plan the overall course and teach the individual units. Course management is discussed in section 6, with attention given to course format, documents for student use (survival guide, course format guide, individualized student progress chart, and student contract), and master records. A blank course planning form is provided in the guide's appendix. (KC)

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A GUIDE TO THE IMPLEMENTATION OF INDIVIDUALIZED INSTRUCTION

(Project 50-004-285)
To Identify Problems and Exemplary Practices
In the Adoption and Use of Vocational Education
Curriculum Materials

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INTRODUCTION

This document has been developed to provide an overview of the Individualized Learning System and its implementation. As in any instructional program, the key to success is the planning that is carried out prior to implementation. With individualized learning, the planning and development of the instructional program is critical to its success. This document will provide information and suggested procedures for implementation of an individualized course utilizing Individualized Learning System materials.

While it is not possible to cover all aspects of individualized instruction, this guide will provide the framework required for getting started. Because of the planning and organization required, it is suggested the teacher begin with one to three units and add several units each semester. This approach will allow both teacher and students to adapt to new procedures, and provide the developmental time needed.

WHY INDIVIDUALIZED INSTRUCTION?

One of the few axioms in education that is agreed upon by educators is that of individual differences. Each of us is endowed with unique physical and mental traits that are a product of our genetics and individual experiences. These traits affect the way in which we learn and the rate at which we learn. If we accept the concept of individual differences, we should plan an educational program that utilizes these differences, and move away from instructional programs where individual differences create a barrier to learning.

Individual instruction is an instructional approach that:

1. Provides the teacher with feedback that allows him or her to know exactly how the student is progressing and when the student has developed a learning problem.

2. Moves the teacher from serving as the only source of information to a role as manager of instruction, with more available time for diagnosing and solving learning problems.

3. Provides a more accurate system of evaluation and feedback for both the student and the teacher.

4. Allows students to progress through the required learning activities as they master them, rather than basing the movement on time.

5. Requires a great deal of planning in order to implement and manage a program effectively.

Individualized instruction is not:

1. A program in which the teacher hands students written materials and retires to the office.

2. A program without student accountability.

3. A program that takes the teacher out of the teaching/learning sequence.

4. A program in which the content is controlled by the student.

TEACHER'S ROLE

The teacher's role in an individualized program requires some change from the traditional role.

Vocational teachers have utilized unstructured instruction on a one-to-one basis in a laboratory setting for many years. Application of this one-to-one instruction is evident in any laboratory setting.

With implementation of an individualized program, the changes required involve development of alternative instructional methods, a highly-developed curriculum plan, and an effective management system as a supplement to the one-to-one instruction.

Implementation of these techniques provides the teacher with a greater amount of time to work with the learning problems that reduce the effectiveness of the student.

The teacher should become a facilitator of learning by:

1. Providing the student with a variety of options for learning through lecture, media, activities, and written resources.
2. Developing course organization and structure that can be followed by the student with a minimum of direct guidance.
3. Identifying and solving individual learning problems.
4. Using an evaluation system that keeps students, teacher, and parents accurately informed of student progress.

STUDENT'S ROLE

In the traditional school setting, the student is dependent on the teacher to plan his or her direction on a day-to-day basis. If the student is faster or slower than the pace set by the instructor, the learning process is not effective, and can lead to behavior and learning problems. The goal of lifelong learner is achieved by allowing the student to take responsibility for his or her own learning on a directed course. This is achieved by the student through the following:

1. Identifying and using the most effective learning cycle.
2. Progressing at his or her highest functional level.
3. Accepting responsibility for mastery of content and skills identified by the teacher.
4. Working as a member of a class to improve the learning atmosphere.

Goal-Based Planning

The state of Oregon has adopted a systematic approach to planning, which was developed to provide a format for all educational planning. The system has as a major thrust a format that provides continuity of goals from state goals through teacher-developed course goals.

GOAL-BASED PLANNING FOR THE ELECTRICAL CLUSTER

Goals are guideposts. They serve to give purpose and direction to a planning activity. Goals provide a common language for discussing the merits of various activities as those activities are carried out.

In the electrical cluster, just as in any other instructional program offered by an educational system, a sense of purpose and direction is essential to good planning. But what are these purposes and directions? Where do they come from? Why should the electrical cluster teacher be concerned? These are questions to be answered before effective planning of an electrical cluster curriculum can proceed.

Each teacher must realize that planning an electrical cluster curriculum cannot begin and end only in a given classroom. It needs to be done with a sense of similar planning in other classrooms and districts within the state.

The goals, goal setting, and competency identification activities the Oregon Department of Education prescribes provide districts a common reference for the planning process. In goal-based planning, teachers must consider four goals: state goals for Oregon learners, district goals, program goals, course goals. They must also consider student competency and state defined competency areas.

State Goals answer the question: What does the Department of Education think a student should get out of public schooling anywhere in Oregon?

District Goals answer the question: What do the local community and its schools think a student ought to get out of local schooling and how is that to relate to State Goals?

Program Goals answer the question: What do the local curriculum planners and electrical cluster teachers think a student out to get out of the electrical cluster and how is that to relate to District Goals?

Course Goals (and Unit Goals—Elementary) answer the question: What do the electrical cluster teachers think a student ought to get out of technical communications, for instance, and how is that to relate to Program Goals?

State Competency Areas answer the question: What does the Department of Education believe to be the critical areas in which students must demonstrate competence for graduation?

Competency, then, answers the question: What have students demonstrated they can do with what they have learned?

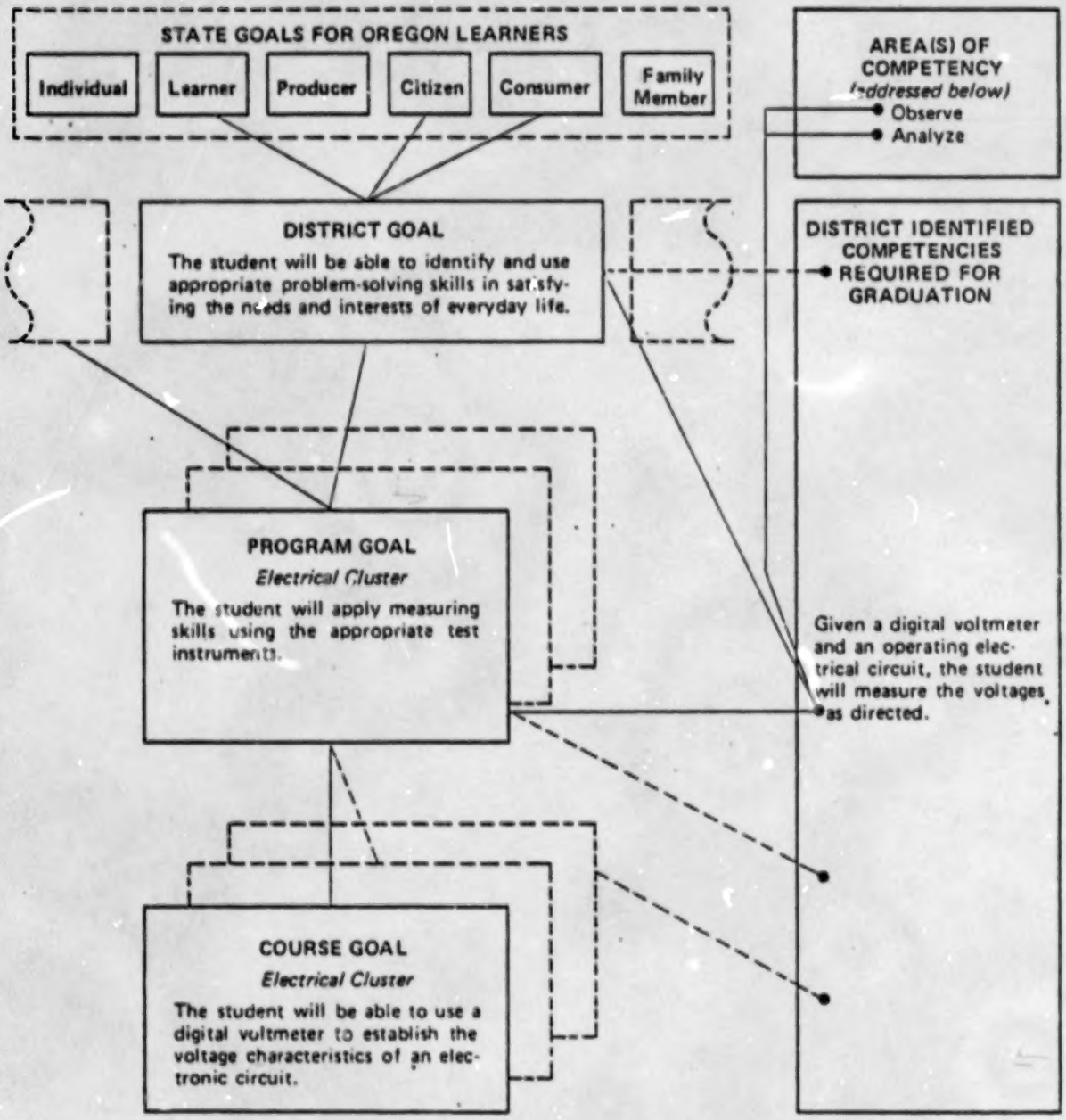
The relationships among each of these components are illustrated on the following page. Note that competencies may be stated broadly (as with district goals) or specifically (as with course goals) depending on how extensive the district desires a particular demonstration to be. The sample competency in the figure is shown as being an intended outcome of both district *and* program level goal planning. Other competencies could be shown as the intended outcomes of district or course goal-level planning (broken lines).*

---

* All goals may not be competencies, but all competencies may be used as goals. Goals are often written about the *acquisition and application* of knowledge and skills. Competencies are ALWAYS written about the *application* of knowledge and skills.

The system of goals and competencies just described* is designed to help the teacher and program specialist plan their own electrical cluster program. It promotes a framework for planning that may be shared by all those doing similar planning. It helps in planning for individual student goals and interests, to be done within the limits of available resources. It should not be used to limit what is planned. Rather it should be used as a starting place.

SAMPLE COMPLEMENTARY GOALS & COMPETENCIES


STATE GOALS FOR OREGON LEARNERS
Individual
Learner
Producer
Citizen
Consumer
Family Member
AREA(S) OF COMPETENCY
(addressed below)
Observe
Analyze
DISTRICT GOAL
The student will be able to identify and use appropriate problem-solving skills in satisfying the needs and interests of everyday life.
DISTRICT IDENTIFIED COMPETENCIES REQUIRED FOR GRADUATION
PROGRAM GOAL
Electrical Cluster
The student will apply measuring skills using the appropriate test instruments.
Given a digital voltmeter and an operating electrical circuit, the student will measure the voltages as directed.
COURSE GOAL
Electrical Cluster
The student will be able to use a digital voltmeter to establish the voltage characteristics of an electronic circuit.

* For more information on goal-based planning, see Oregon Department of Education publications *Elementary-Secondary Guide for Oregon Schools: Part II, Suggestions* (1977) and *Planning the Education of Oregon Learners: Setting Goals* (1975).

CLUSTER GUIDE

The basic approach used in development of the cluster guides was a task analysis of related occupations to derive the skills and information common to all of the occupations within the cluster.

The vocational cluster guides were developed and written by teachers to provide the student in an occupational education program as many employment options as possible, based on manpower projections for the state of Oregon. The guides have been developed as guides to curriculum, with the teacher and district having final responsibility for scope and sequence of the courses. An outline of basic knowledge and skills needed for job entry in occupations listed is provided. The guides should be used as the basis for developing the teacher's individual curriculum. There may need to be additions or deletions to the outline, as dictated by school/student and community needs in a specific school setting. The cluster guides also provide a good deal of information on safety, laboratory facility planning, and laboratory practices.

INDIVIDUALIZED LEARNING SYSTEM

The Individualized Learning System instructional materials were developed by classroom teachers to provide the teacher and the student with individualized learning material. The Individualized Learning System materials developed include modules, instructional media booklets, and guides.

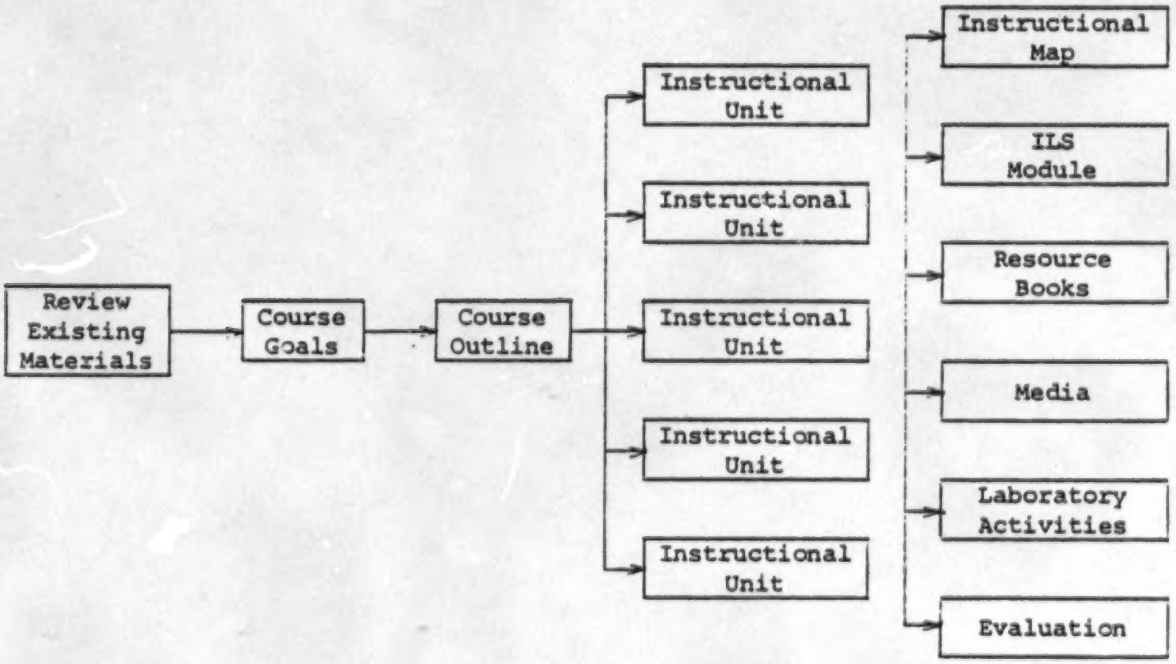
The modules have been developed to include the following:

1. Objectives--describing the student outcomes for the module.
2. Directions--what the student does to complete the module.
3. Information--a summary of information about the specific topic covered in the module.
4. Activities--activities such as experiments, problems, projects designed to develop skills and understanding of the topic.
5. Evaluation--written tests over the material covered in the module.

The Individualized Learning System materials have been developed to reflect the content identified in the cluster guide, and should serve as the basic structure for individualized programs.

PLANNING THE COURSE

Select the instructional units that will be taught in the curriculum for your school. Use the Individualized Learning System materials and the cluster guide as the main sources to help you identify units or topics. The following diagram will help illustrate the planning procedure.



Outline the complete course or program by major units. These major units should be somewhat self-contained. If one unit or topic should be preceded by another, make sure the units are properly sequenced. After you have listed the major unit topics, break each down into second-level topics. Avoid being too specific. You should be able to place the outline on one or two typed pages. Include enough additional activities to allow more advanced students to go into greater depth. The listing should reflect course goals or outcomes, and should

help identify what the students will be capable of doing when they complete the course or program. The course planning form will help the teacher plan the course. A copy of the form is found in Appendix A, and may be copied. The column headings and contents are as follow.

Class Periods

The estimated amount of time it would take to complete a unit of instruction on the topic listed. The teacher should keep in mind the total number of periods available during the year and any scheduling system that is unique to his/her school, such as shortened periods on Fridays.

Instructional Unit/Topic

This column should include the major topics or units that will be taught. This listing should include not only the technical topics, but those that deal with career education and youth leadership programs.

Goal/Objective

The listing should indicate what the student will be capable of doing as a result of instruction in each of the topics or units.

Learning Activities

The learning activities should be a listing of kinds of activities the students complete in order to master the information and develop skills that will allow him/her to reach the objective or goal established for the unit or topic. These activities could include construction of some object, viewing a slide-tape, conducting club activities, or completing an experiment and reporting the results. This column is important in establishing the amount of time needed to complete the unit.

Evaluation

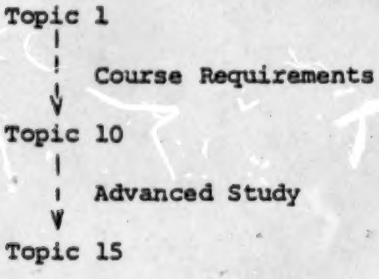
This column should provide information on how the teacher will judge when the learner has completed the unit and the level of proficiency the learner has achieved.

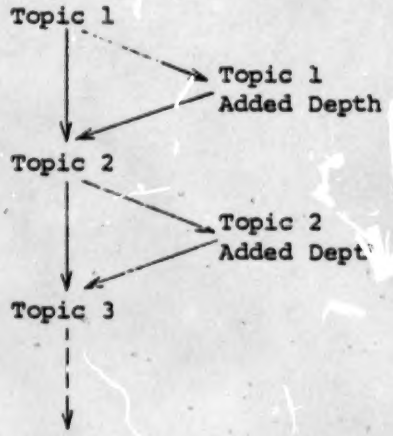
COURSE PLANNING

Course_____ School_____ Page _____ of _____

Class Periods	Instructional Unit/Topic	Goal/Objective	Learning Activity	Evaluation
How long does it take?	1.0 Major unit 1.1 Minor unit 1.2 Minor unit	1.0 Goal 1.1 Objective 1.2 Objective	1.0 How the student will learn	1.0 How you and the learner will know when proficiency has been achieved
	1.0 Semiconductors 1.1 Transistors 1.2 Diodes	1.0 Describe the function of semiconductor devices 1.1 Describe basic transistor theory 1.2 Wire a transistor into a circuit board	1.0 Study ILS Packet #3 1.1 Read pages 7-23, Jones and Jones 1.2 Complete lab exercises #7, 8, and 9	1.0 written test on transistor theory 1.1 Complete lab report #7, 8, and 9

After the teacher has settled on the final outline, he/she should double check the amount of time allotted to each activity. The time should represent the amount of time it would take an "average" student to get through the material. Obviously, some students will not complete all activities; while others will complete all of the requirements and still have time to go on to other, indepth activities. Activities planned for advanced students should be designed to provide additional learning, rather than just repeating activities already completed. Such activities are useful only to keep students busy. This may be approached in two ways, as illustrated below.





MAPPING THE UNITS

After you have completed the course outline, you will need to develop an indepth procedure or map of how the student will complete each unit or subunit in order to achieve the desired unit of proficiency. The instructional map should be about one-to-two weeks in length. Shorter units tend to waste students' time, as they lose time moving from unit to unit. Longer units do not provide the teacher and student enough feedback on progress, and may lead to disinterest. The actual time required for each unit may vary, and should be based on the amount of material covered and the level of proficiency that is required of the student. If there is a structured weekly schedule of introduction, laboratory work, and evaluation, the teacher should be extremely careful in his/her planning to balance the proficiency level and breadth of knowledge. A form similar to the following should be used to map the procedure for each unit or subunit. Each unit should be developed and checked to make sure all of the components are available or are developed. The material for each unit should be coded with the unit number to facilitate location and use as needed. After the first usage, the materials should be updated to reflect completion time and difficulty. Student input at this time can be helpful in revising the materials.

An instructional unit map appears on the next page, followed by an example of a completed form.

INSTRUCTIONAL UNIT MAP

Unit_____ Code_____

Performance Indicators

At the end of the unit, you should be able to:

Resources

To complete this unit, you should:

Laboratory Activities

Evaluation

INSTRUCTIONAL UNIT MAP

Unit_____ Code_____

Performance Indicators

At the end of the unit, you should be able to:

Describe the theory of transistor amplifiers.

Construct a simple amplifier.

Measure the output of the amplifier.

Resources

To complete this unit, you should:

Read and study ILS Module EL-CT-15.

Pages 74-78, Jones and Jones.

Laboratory Activities

1. *Assemble Kit 7-C.*
2. *Calculate theoretic output.*
3. *Conduct Experiment 7-C.*

Evaluation

1. *Written Test 7-C on transistor amplifiers.*
2. *Completion of Lab Report 7-C.*

COURSE MANAGEMENT

The key to success in any individualized instructional program is management planning. Most of the problems that arise in individualized learning are brought about by students who do not know where they are, where they are going, or how to get there. An effective management system should provide a system of operating procedures for both the teacher and the student. The system should provide the instructor and the student with information and a reporting procedure on the following items:

1. Where the student has been, or a record of past achievements in the course.
2. How well the student has done in the past.
3. Where the student is at the present time.
4. Where the student will go after completing present units.
5. What is expected, and how evaluation will occur.

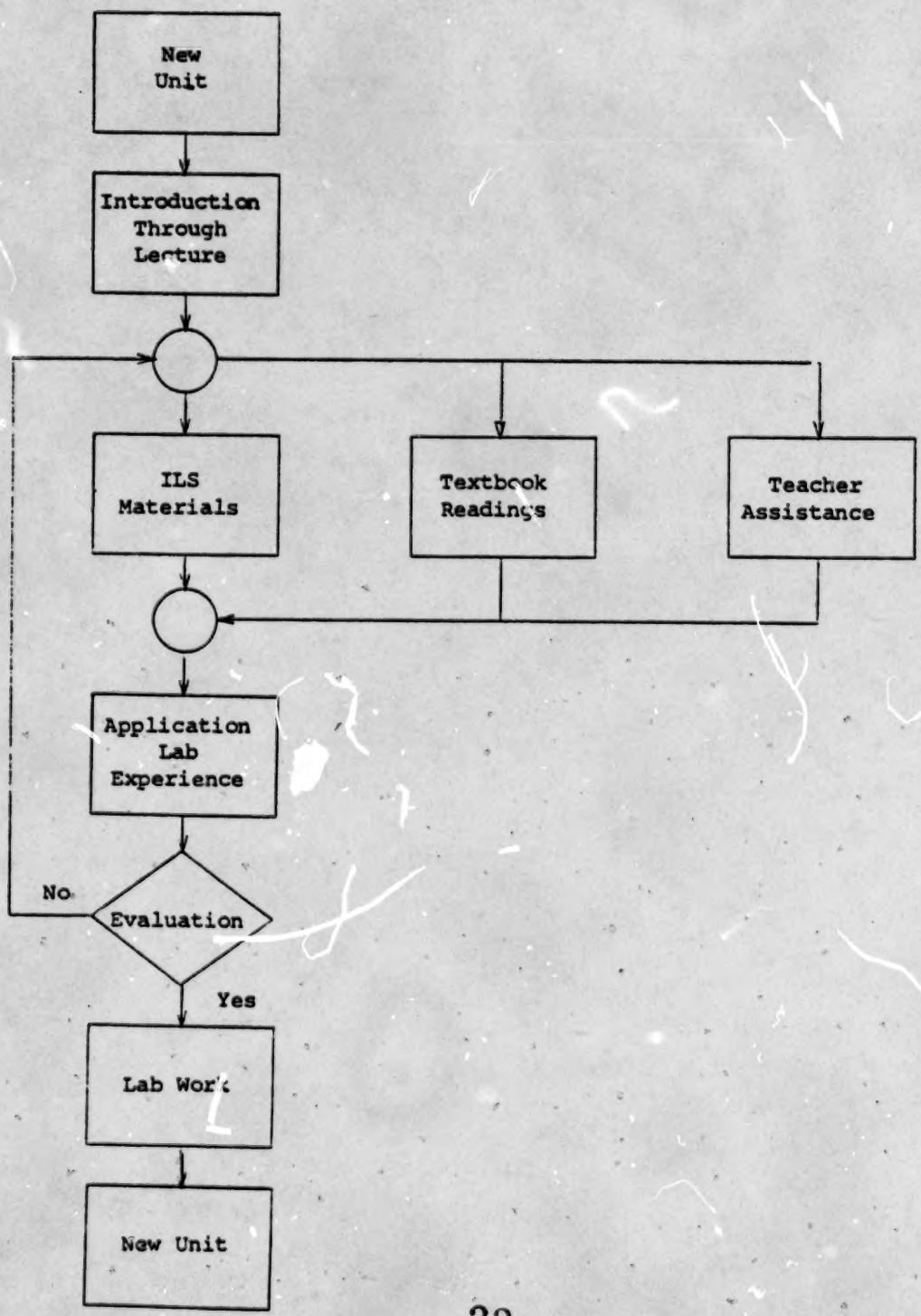
When an instructional program is changed from large-group format (that is, a completely teacher-controlled class that moves from topic to topic as a group) to an individualized approach, the need for record-keeping increases. Students moving at their own rates gain needed proficiency at different times and must be directed at different times, increasing the need for control and accurate record-keeping.

One of the elements that leads to effective classroom management is a schedule or procedure that is followed and repeated so the student becomes accustomed to a daily and weekly routine. The student will learn to expect certain procedures when he or she enters the classroom, with the established procedures carried out until the class is dismissed.

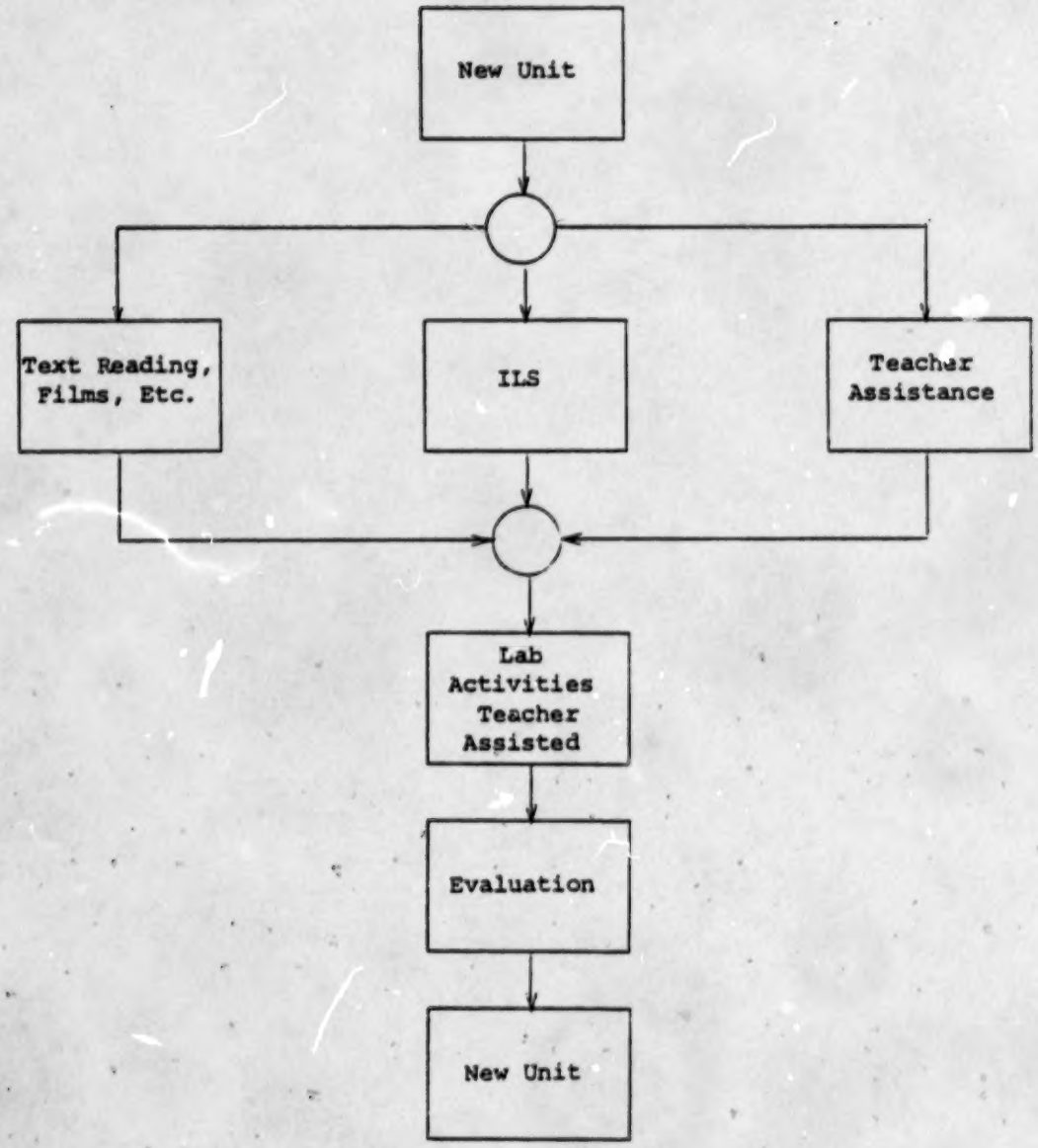
COURSE FORMAT

The following are two plans that illustrate the systems that could be followed in an individualized curriculum. Module A utilizes weekly lectures that are used to introduce new material. The model requires that the skills and content be subdivided into weekly units. Model B is designed for use in a program that allows students to individually move through the content and skill requirements. This model is based on unit mastery by each student, rather than on weekly units.

MODEL A


New Unit
Introduction Through Lecture
ILS Materials
Textbook Readings
Teacher Assistance
Application Lab Experience
No
Evaluation
Yes
Lab Work
New Unit

MODEL B


New Unit
Text Reading, Films, Etc.
ILS
Teacher Assistance
Lab Activities Teacher Assisted
Evaluation
New Unit

SURVIVAL GUIDE

A "survival guide"--explaining the course, forms used, materials and media locations, and any other pertinent information--should be assembled to help the student learn how the system works. By establishing a guide, the teacher can alleviate problems by referring to the guide and reducing the need to make instant decisions that can affect the learning process. The document should be short and direct, and should answer standard questions. It will need revision as the teacher settles into the course and removes inconsistencies. A copy of the table of contents for an elaborate, two-year community college guide and a course format chart appear in the following pages.

In addition to a written outline, students need to be convinced in the beginning that this type of system (individualized instruction) does work and is successful. Remember, to most students this is a radically new way to learn, and some disenchantment may take place. Continue to praise and upgrade the program often and show the students, whenever possible, how much learning has actually taken place.

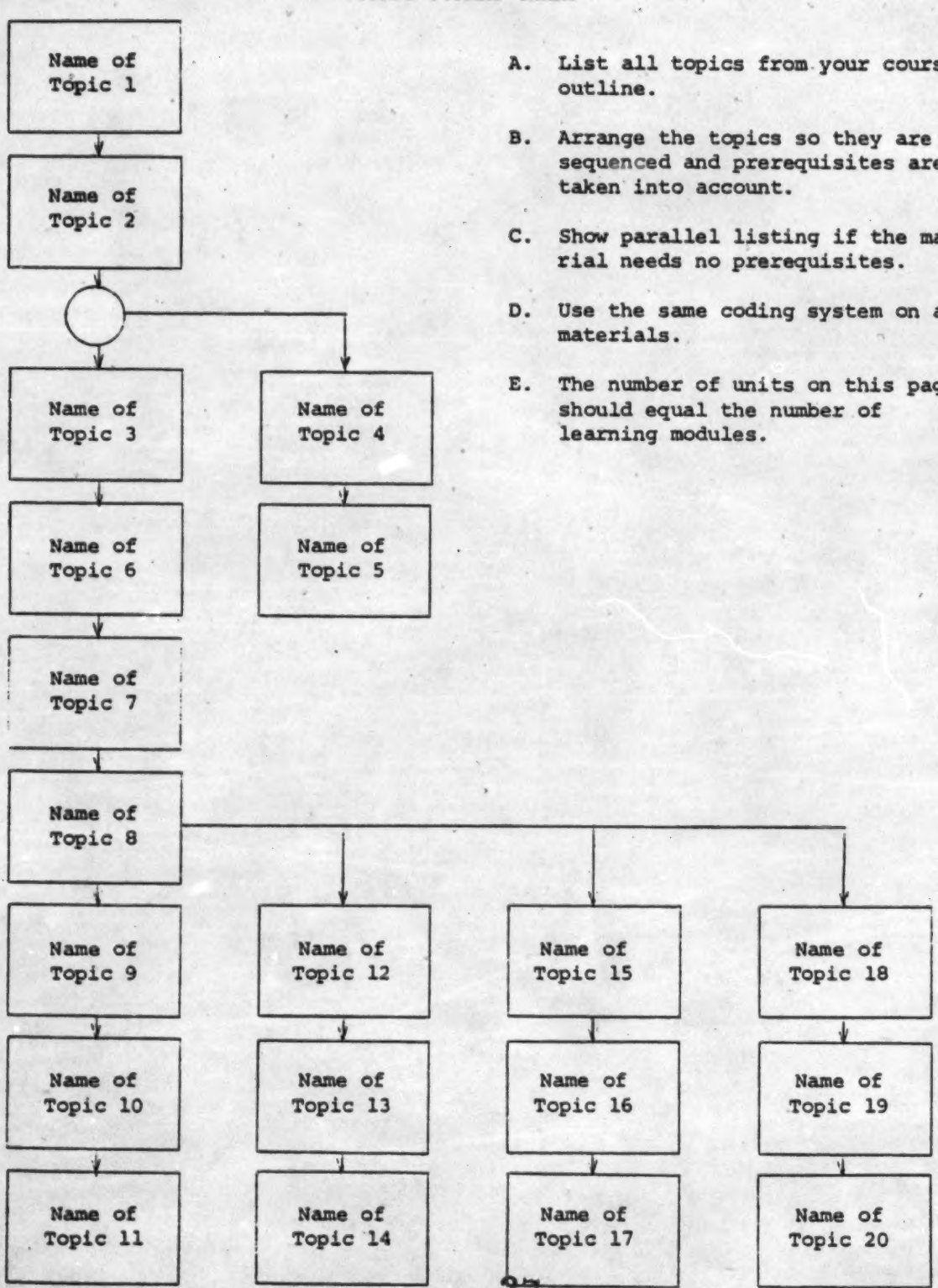
Also remember to bring classes together at least once per day, if for no other reason than to take roll. Problems will arise if students develop the thinking that they are all by themselves and not part of a group working together.

TABLE OF CONTENTS

1.	INTRODUCTION	2	This sheet
2.	LEST (LEarning STep) Packet List	3	Li 4
3.	LEST Packets	3	
	3a) What is a Packet?	3	
	3b) LEST Packets for Inspection	3	Ex 4
	3c) Deciding Which Packet You'd Like Next to Take	3	Sc
	3d) Getting the Packet You Want	3	Ex 25
4.	Doing your LEST	3	Ex 32
	4a) The LEST Packet	3-4	Ex 27
	4b) The LEST Special Project	4	Ex 7, 13, 9
5.	LEST Tests	4	Ex 16, 18, 32, Fo
	5a) The STECOM Tests (All are "Closed Book" Tests)	4	
	5b) The Challenge Test	5	Ex 24
	5c) The Area Tests	5	SC 3
6.	LEST Credit Hours	5	Li 4, Fo 18
	6a) For Taking Tests in Electronics and Math	5	Ex 16
	6b) Because of Prior Knowledge	5	
	6c) For Doing Special Projects	6	Ex 7, 13, 28
7.	Punching Your "Credit" Card	6	Co 1, 3, 4, 6
8.	Computer Print-outs	6	
9.	"DID" Slips	6	
10.	LEST Updating and Corrections	6	Ex 3
11.	Clipboards and Your Personal Folder--The Communications Link	6-7	Ex 6
12.	Attendance Recording	7-8	
13.	Working Together	8	Ex 21, 22, 23, Li 2

14.	Technical Information Sources	8	Li 1
	14a) Textbooks for Electronics	8	Li 1
	14b) Textbook for Math	8	
	14c) Technical Library Book List and Specific Information	8-9	Ex 2, Li 1
15.	ISICLE Math	9	Ma 6, 7, 8
	15a) Before You Start Working Your Math	9	
	15b) How to Follow Your Nose in Math	9	
	15c) The Tests	9-10	Ma 13, 14, 15
	15d) Computer Print-outs	10	Co 8
	15e) The Records	10	Co 8, Ex 6
	15f) The Credits	10	Ma 5, 6, 7, 8
	15g) The Grades	10	Co 8, Ex 27
16.	ISICLE "Loose Sheet" Information Sheets	10-11	Li 6, Ex 31
17.	Audio Visual Aids	11	Li 7
18.	Lab Equipment Checkout	11	Ex 35
19.	Your Personal Conduct in the Center	11	
20.	General Comments About the ISICLE Program and the Electronics Learning Center	11	
	20a) Suggestions	11	
	20b) The Experiment Bins and the Return of Parts to Their Proper Places	12	
	20c) Equipment Manuals	12	
21.	Miscellaneous Rules	12	
22.	Tool Boxes and Tools	12-13	

COURSE FORMAT CHART


Name of Topic 1
Name of Topic 2
Name of Topic 3
Name of Topic 4
Name of Topic 6
Name of Topic 5
Name of Topic 7
Name of Topic 8
Name of Topic 9
Name of Topic 12
Name of Topic 15
Name of Topic 18
Name of Topic 10
Name of Topic 13
Name of Topic 16
Name of Topic 19
Name of Topic 11
Name of Topic 14
Name of Topic 17
Name of Topic 20

A. List all topics from your course outline.

B. Arrange the topics so they are sequenced and prerequisites are taken into account.

C. Show parallel listing if the material needs no prerequisites.

D. Use the same coding system on all materials.

E. The number of units on this page should equal the number of learning modules.

INDIVIDUALIZED STUDENT PROGRESS CHART

An individual folder or page that lists all of the major goals included in the course should be developed as a personal record for each of the students The record should be coded to indicate the completion date and degree of proficiency for each learning activity. The record could also be used by the student as a summary of instructors for p.ospective employers and advanced technical training. The format for each entry would be as follows:

Proficient in Concept	Minimal Skills	Introduced to Concept	No Exposure	
		3/17		*Three-way switch*
				Etc.

CONTRACT

This teaching strategy is based on a written agreement between the teacher and the student, and performs several functions:

1. It helps shift the burden of planning and achieving to the learner.
2. Provides a basis for evaluation by setting goals and activities down on paper, so the teacher and the student know exactly what is expected of the learner.
3. Outlines the conditions and strategies required for each activity.
4. Outlines the procedures for evaluation.

ELECTRICITY/ELECTRONICS GRADE CONTRACT AGREEMENT

For:

Name_____ Year_____

Semester_____ Quarter_____ Year_____

****

For a semester grade of _____, _____ agrees to complete and observe the following minimum conditions:

1. Attend class with a minimum of tardies and absences, as required by the posted classroom attendance rules.

2. Maintain satisfactory work/study habits while in the classroom.

3. Follow instructions.

4. Present a good attitude and interest toward the class, fellow students, and the instructor.

5. Communicate with the instructor if any problems should arise in trying to perform this contract.

6. Complete the listed/posted assignments and competencies during the semester. I agree to finish the assignments in accordance with the instructor's schedule.

7. Project_____
_____
_____

8. Repair Items: Bring in a minimum of _____ electrical or electronic items to evaluate and/or repair. Very simple fixes or assigned repairs may not count if no trouble-shooting steps are involved.

9. Want Ads: Turn in a minimum of _____ electrical or electronic related "Help-Wanted Ads" at the rate of one per week, with no more than two of any given occupation and no duplications of other student ads. Ads must be current, only one ad per week will be accepted, and ads must be found by each individual student.

10. Career Statement_____
_____
_____

11. Interviews _____

12. For a grade of "A," I agree to do: _____

13. Graduation Requirements--CPI _____

14. Graduation Requirements--CPI _____

15. _____

Comments _____

****

IT IS UNDERSTOOD THAT FOR EACH CONDITION OF THE CONTRACT AGREED TO AND NOT MET MY GRADE MAY BE LOWERED ONE LETTER GRADE.

****

Signed:

Student _____ Date _____

Instructor _____ Date _____

MASTER RECORDS

The teacher should develop a set of master records that can be used to monitor progress and achievement by each student. The records should parallel the forms developed by the student, and should be maintained in the same manner as a grade book. These can be arranged in a notebook for each class, and should hold all of the information required by the instructor. Examples of the information contained include:

1. Attendance.
2. Progress of students.
3. Safety records.
4. Student contracts.
5. Course organization.
6. Student materials and supply expenditures.

APPENDICES

Appendix A

COURSE PLANNING

Course_____ School_____ Page _____ of _____

Class Periods	Instructional Unit/Topic	Goal/Objective	Learning Activity	Evaluation